

Express Mail No.: EV529786600US
International Application No.: PCT/EP2004/002961
International Filing Date: March 20, 2004
Preliminary Amendment Accompanying
Substitute Specification

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A flow channel for liquids characterised characterized in that at least one wall defining the flow channel is of such a configuration that when a liquid flows therethrough at least one flow region is produced which has an axial and simultaneous tangential flow component,

wherein the flow cross-section of the flow channel is non-cylindrical and is twisted in itself in the axial direction so that when the liquid flows therethrough a spiral-form flow is produced at least in region-wise manner.

2. (Currently Amended) A flow channel according to claim 1 characterised characterized in that the wall is of such a configuration that a circulating spiral flow is produced in region-wise manner or completely.

3. (Currently Amended) A flow channel according to claim 1 or claim 2 characterised characterized in that the flow cross-section of the flow channel is non-cylindrical and is twisted in itself in the axial direction so that when the liquid flows therethrough a spiral-form flow is produced at least in region-wise manner.

4. (Currently Amended) A flow channel according to claim 3 characterised characterized in that the length of a tube portion which is completely wound once in itself (wavelength) is in a given ratio to the length of the smallest bisector

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of the cross-sectional area of the flow channel, which is in the region of 6 to 7, particularly preferably in the region of 6.44.

5. (Currently Amended) A flow channel for liquids, in particular according to ~~claim 1-one of the preceding claims, characterised characterized~~ in that the wall delimiting the flow channel is so shaped that the free flow cross-section of the flow tube is substantially oval.

6. (Currently Amended) A flow channel according to claim 5 ~~characterised characterized~~ in that the ratio of the length of the longer axis of the oval flow cross-section to the shorter axis of the flow cross-section is greater than 1, preferably greater than or equal to $\sqrt{2}$.

7. (Currently Amended) A flow channel according to ~~one of the preceding claims characterised claim 1 characterized~~ in that the flow cross-section decreases in the flow direction.

8. (Currently Amended) A flow channel according to ~~one of the preceding claims characterised claim 1 characterized~~ in that the flow cross-section enlarges in the flow direction.

9. (Currently Amended) A flow channel according to ~~at least one of the preceding claims characterised claim 1 characterized~~ in that the flow cross-section is quadrangular, triangular, hexagonal or octagonal.

10. (Currently Amended) A flow channel according to ~~one of the preceding claims characterised claim 1 characterized~~ in that it is in the form of a tube.

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11. (Currently Amended) A flow channel for liquids, in particular according to one of the preceding claims claim 1, wherein the flow channel is so designed that within the channel when a liquid flows therethrough substantially two flow regions are produced, which do not or which scarcely interpenetrate and which are wrapped around in the nature of a double helix.

12. (Currently Amended) A flow channel according to claim 11 characterised characterized in that within each flow region there are produced further sub-flow regions which in turn are again intertwined with each other.

13. (Currently Amended) A flow channel according to claim 11 or claim 12 characterised characterized in that the two core flow channels are of a substantially round cross-sectional configuration and form a main fluid flow and that produced in the region of the flow tube which is not occupied by the main flow cores are one or more secondary flows, wherein no or preferably only a slight fluid exchange takes place between a main flow and a secondary flow area and foreign bodies in the entire fluid flow are preferably transported in the secondary flow area.

14. (New) A flow channel comprising:
a tube that has a non-circular cross-section, the tube having a longitudinal axis that is perpendicular to the cross-section the cross-section having a selected height and width that are different from each other, the tube undergoing a twist relative to its longitudinal axis, the twist being 360° or greater over a length of the tube that is 10 times or less than the smallest distance across the tube in the cross-section.

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15. (New) The tube according to claim 14 wherein the tube undergoes the 360° twist along its length over a distance of between 5 and 9 times the smallest width of its cross-section.

16. (New) The tube according to claim 15 wherein the tube undergoes the 360° twist along its length over a distance between 6 and 7 times the smallest width of its cross-section.